KPDES FORM HQAA

Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KRS 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name:	Buck Creek West	**KPDES NO.:**	Pending
Address:	147 Big Blue Boulevard	**County:**	Letcher
City, State, Zip Code:	Whitesburg, KY 41858	**Receiving Water Name:**	Buck Creek / Camp Fork

II. Alternatives Analysis

1. Has discharge to other treatment works been investigated? **Yes** ☒ **No** ☐
(If yes, then indicate which treatment works were considered and the reasons why that discharge to these works is not feasible.)

Please refer to Attachment II.1.

2. Have other discharge locations been evaluated? **Yes** ☒ **No** ☐
(If yes, then indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.)

Please refer to Attachment II.2.

Attachment II.1

The Blackey Water Treatment Plant is approximately 13.6 miles downstream from the proposed project area. Significant amounts of capital to construct, operate, and maintain a connection to this plant would be required to discharge at this facility. The cost estimated with discharging at this location is discussed as follows:

Students at the University of Texas at Austin College of Engineering under the direction of Professor Daene McKinney estimated, based on research and analysis of relevant available data including information available from R.W. Beck, Inc. (a leader in pipeline planning and construction) that subterranean pipeline construction costs generally follow this proportional model[1]:

Table II.1a

Expense	Cost Percentage	Median
Pipeline Materials	26-33 %	29.5 %
Labor	43-47	45
Right of Way / Misc.	24-27	25.5

Using the median value of each range above, for every $1 spent on piping materials, $1.53 will generally be expended on labor, $0.87 for Right of Way and other associated construction costs, totaling an estimated $3.40 per dollar spent on piping materials. Using publicly available data for wastewater construction costs funded by the Pennsylvania Department of Environmental Protection over the last 10 years, the average cost for 12" diameter pipeline materials was $36.54 per linear foot[2].

Combining the average pipeline materials cost with the respected cost percentages in table II.1a, an average cost of pipeline construction for this project to completeness can be estimated. Individually assigning dollar amounts to each expense category, the cost relationships will be as follows: $55.91/lf for labor, $31.79/lf in right-of-way and other project construction costs and as previously stated, $36.54/lf for pipeline materials, totaling a final average pipeline construction cost of $124.24/lf. To build a pipeline directly to the water treatment plant in Whitesburg, KY, 6.3 miles downstream, and disregarding additional linear feet requirements due to changing topography, right-of-way or existing developmental issues, the cost could be estimated as follows:

Example II.1a

$$\frac{5{,}280 \text{ linear feet (lf)}}{1 \text{ miles}} \times 13.6 \text{ miles} \times \frac{\$124.24}{\text{lf}} = \$\ 8{,}921{,}426$$

---

[1] Pipeline Cost Estimation
[2] Wastewater Cost Database

In addition to pipeline construction costs, a minimum of three pump stations are recommended, according to the Model Drainage Manual, to make the pipeline fully functional[3]. Excluding the five most expensive examples, the average cost for a pump station is approximately $68,630 (as stated by the Pennsylvania construction data previously referenced). It is then estimated that the total cost for this alternative discharge system will exceed $9.1 million as shown in example II.1b.

Example II.1b

13.6 miles pipeline construction =	$ 8,921,426
+ 3 pump stations ($68,630 x 3) =	205890
	= $ 9,127,316

Aside from great financial contributions, additional limitations and state legislation would further complicate this alternative in its implementation. The Blackey Water Treatment Plant is not capable of handling the volume of water from a ten or twenty year storm. The discharge from the proposed operation will be sediment laden. The amount of sediment that will be produced from this type of discharge cannot be tolerated by The Blackey Water Treatment Plant. The plant operates under the Kentucky Division of Water which does not permit the use of discharge to combined sewers (wastewater and storm water), preventing this alternative on the state level. However, the ponds proposed are specifically designed to control the associated sediment load.

In the evaluation of discharging to a nearby treatment works, transporting the discharge by truck was investigated. The average cost of a 4000 gallon water truck is $60,000, with an annual salary of a truck driver being $37,000[4,5]. Excluding fuel costs and equipment maintenance, the financial undertaking appears to be impractical. Consider the following scenario: Assuming an area of disturbance takes on 4.2 acre feet of rainfall per year equal to 1.4 million gallons of water per acre, using 4,000 gallon water trucks would require 350 truck loads per acre. For the proposed operation, which is approximately 108 acres, this alternative would be considered not feasible due to un-reasonable cost and capital.

---

[3] Model Drainage Manual
[4] Rock and Dirt
[5] Payscale

Attachment II.2

Discharging to other nearby waters such as Rockhouse, Beaver Damn and Trace Fork were investigated. However, these alternatives are High Quality Waters as they were not found listed on 303(d), 305(b) lists of congress, special use waters or outstanding waters. Therefore, there would be no advantage to pumping sediment laden discharge from this site into these waters which are not already impaired. These waters are in a different watershed and because of topography and terrain connecting the discharge from the site proposed would require pumping up and over the mountain. This option would require approximately 3000 feet of pipeline, pressure lift stations and a central containment structure. All of these additions will result in a cost over $1 million dollars. Excavation, installation and involved constructions would create additional environmental disturbances with the same water quality control as the proposed operation. A low estimate of cost for this alternative goes as follows[6]:

Table II.2a

Expense	Cost
Pressure Lift Stations	$ 388,800
Pipeline Construction	$ 372,720
Containment / Maintenance	$ 240,456
Total:	$ 1,001,976

The placement of the proposed discharge locations were engineered to be the most effective and least invasive.

[6] Kentucky Division of Water

II. Alternatives Analysis - continued

	Yes	No
Has water reuse or recycle been investigated as an alterative to discharge? (If yes, then provide the reasons why it is not a feasible alternative	☒	☐

Please refer to Attachment II.3.

	Yes	No
4. Have alternative process or treatment options been evaluated? (If yes, then indicate what process or treatment options have been evaluated and provide the reasons they were not feasible.)	☒	☐

Please refer to Attachment II.4.

Attachment II.3

The drainage area for this operation including the accompanying silt structures is approximately 253.59 acres. Considering the average rainfall in Letcher County Kentucky is 46 inches per year, and the possibility of a 25 year storm event, the discharge could potentially be 821.63 cfs. In order to reuse or recycle this water, a central collection structure system would have to be constructed. The cost associated with a system capable of handling the estimated discharge in this particular area would well exceed $1 million dollars. Because there is not a coal preparation plant on or close to this operation there will be no practical use for the collected water and would make this option very unreasonable when considering the costs and absence of opportunities involved[7].

Trucking the discharge from the site to a preparation plant or water treatment facility would require the construction and installation of pumps to facilitate water into the trucks, approximately 2000 feet of new access roads through unharmed environment, and the maintenance of this system easily totaling over $1 million dollars. Considering the narrow access and similar unchangeable existing roadways throughout Letcher County, public safety on its roads would also be put in jeopardy with this alternative.

Applying the discharged water to the area as a form of recycling was investigated. Because the slope is greater than 6% the absorption rate does not support land use for reclamation or extensive land applications. Reapplying the water, especially this amount, would create intensive erosion problems that the proposed project is designed to protect against.

A small percentage, less than 10%, will be considered for dust suppression activities on haul and access roads.

---

[7] Sperling's Best Places

Attachment II.4

The construction of an on site storm water treatment facility was considered. However, great economical and capability constraints exist. Using the rational equation to calculate peak flow rates for a 25 year, 24 hour rainfall event it can be shown that the volume and discharge capabilities of such a facility would be unrealistic. The equation below is how peak flow rates were calculated[8]:

$Q=CiA$

Where,
Q is the peak flow rate
C is the runoff coefficient
i is the rainfall intensity
A is drainage area in acres

It is then estimated that in such an event the facility would face a possible 368773.2 gpm water flow. The cost associated with a system capable of this kind of discharge rate would be astronomical. For example, recently a company out of Ohio called Beckman Environmental, who specializes in this kind of construction, quoted a project where the peak discharge was 3800 gpm, the lift for the project of only 30 feet, and included the necessary effluent and influent lines for $2.5 million dollars[9]. The peak flow is for the project proposed is 97 times greater than this example, assuming the cost association is somewhat linear, the cost to build a treatment plant on this site would reach unobtainable financial obligations. To add to those unrealistic expenses, the structure that would have to be created would more than likely be considered a MSHA impoundment structure. Having such a large facility holding such a volume of water would pose several safety threats to not only the workers involved in the mining project but also to those living below the installment. The cost to maintain a MSHA structure as large as this one would further more complicate its feasibility.

Sand filtration was also considered as an alternative process. Sand filtration is an option that is most useful in small urban drainage areas where a pre-treatment is needed to remove microbial contaminants in storm run off areas. In this situation, there is large particulate matter that sand filtration would not be acceptable for. The slope of the area is greater than 6% and will be sediment laden, the proposed project is designed to control storm water runoff and handle these loads of sediment. Sand filtration is not designed for control of storm water and will be an ineffective treatment option.

Silt fences and straw bale dikes will be used in the reclamation process in locations that are suitable for their use. As a primary sediment control system they are inadequate.

---

[8] Applied Hydrology and Sedimentology for Disturbed Areas
[9] Beckman Environmental

Considering the greater than 30% slopes, elevation of the site, and drainage area size of 253.59 acres, this option would not be sufficient.

Considering other methods of mining to reduce the lowering of water quality were investigated. However, mining methods are determined by elevation, thickness of coal seem, and amount of cover over the reserves. Considering all of these factors and an elevation of approximately 1600 ft. above sea level, auger and contour mining are the only feasible methods to recovering these coals seems.

II. Alternatives Analysis - continued

	Yes	No
5. Have on-site or subsurface disposal options been evaluated? (If yes, then indicate the reasons they were not feasible.)	☒	☐

Please refer to Attachment II.5.

	Yes	No
Have any other alternatives to lowering water quality been evaluated? (If yes, then describe those alternatives evaluated and provide the reasons why these alternatives were not feasible.)	☒	☐

Please refer to Attachment II.6.

Attachment II.5

Installing an on site sanitary septic system was evaluated. Because of the potential to accrue a peak flow rate of 821.63 cfs, the system would have to be capable of handling 532 million gallons of water in a single day. Considering that an above average sized septic tank can treat approximately 6000 gallons of water at one time, this site would require nearly 90,000 septic tanks. Because these tanks would be specifically engineered for this project, all of them would require mounds, sand/peat filters, aerobic systems and possibly constructed wetlands. Using this kind of system increases the cost of normal septic systems and could possibly cost $20,000 dollars for 1 specialized septic tank; incurring an unenviable amount of money and capital[10]. Septic systems are used to degrade organic and biodegradable material over time by anaerobic digestion. While the source of water would most likely contain some organic material and bacteria, it would be inadequate to decompose the sediment and would work essentially the same as a sediment structure.

Discharging below surface at a nearby underground mine was also investigated. This option would require the construction of several on site sediment structures, such as the ones proposed on this job, to contain the runoff. However, the pre-law underground works was not designed to accommodate the volume of discharge predicted by this drainage area. Considering an event that produced peak discharge (821.63 cfs), there would be potential for underground blowout or reverse of drainage through the portal entry of the mine if the mine did not drain properly. Contamination of the underground water supply is a major concern for ground water users in the area when using underground injection. Because of the rural locations and use of ground water wells, underground injection could directly endanger several local inhabitants.

[10] Cost Helper

Attachment II.6

The evaluations of other alternatives to lowering water quality were thoroughly examined. Alternatives such as, not constructing the mining operation, were weighed against the positive socioeconomic advantages to its construction. For the 2006 fiscal year the total coal severance tax for Letcher County was over $18 million dollars. The severance tax money is placed back into the needful communities of Letcher County providing better roads, schools, updated police and fire fighting efforts, and healthcare facilities. The total tax returned to Letcher County was $1,115,967 dollars. The proposed project will positively add to the severance tax refund for Letcher County while contributing revenue for individuals who become employed by the mining operation. The estimated revenue for the approximate 45 jobs associated with this project will yield approximately $2,398,500 million annually. Not constructing the mine would take away these monetary benefits to not only the communities that are involved but also individuals who would have a chance to better their financial and social well being[11].

Acquiring more stringent discharge limitations was considered. However, this would require an aggressive chemical treatment plan to the central containment structures that are in question. This alternative plan would more than likely increase the risk of environmental contamination and personnel accident. The cost for treating and maintaining such a massive volume of water this way is phenomenal. There were several plans of treatment to be researched including: soda ash, caustic soda, and ammonia treatment. Soda ash and caustic soda alternatives are not satisfactory when treating high flow scenarios. The most reasonable chemical alternative considered was a hydrate lime treatment. Hydrate lime treatment is one of the most cost effective and efficient ways to treat large flow discharge. However, due to the hydrates hydrophobic properties, its ability to dissolve readily is hindered and needs mechanical mixing to facilitate its solubility. Therefore, the construction of an on site mixer and a silo need be installed in order to be efficient. Although this method is generally cost effective, if applied to this particular project the economic feasibility would be unjustifiable.

Using an example of a central containment structure, holding discharged storm water run-off, with a flow rate of 1000 gpm and an acidity value of 2500 mg/l, the estimated initial expenditure would reach $1,313,970 dollars, while yearly upkeep on the facility would cost over $311,000 dollars. After five years of mining the total cost of this alternative effort alone would reach over $2.87 million dollars assuming normal installment conditions. Considering there is potential for a rainfall event to reach a 368773.2 gpm flow rate on a slope that is greatly above normal installment standards, plus the need for extra efforts in supplying electricity due to the remote location, this alternative begins to appear very unreasonable and non-cost-effective. Please refer to table II.6a for more information.

---

[11] Kentucky Coal Education Handbook

Flow and Acidity Conditions

Flow (gpm)	50	1000	250	1000
Acidity (mg/l)	100	100	500	2500

Hydrated Lime

reagent costs	$814	$9,768	$12,210	$244,200
repair costs	1,000	3,100	3,500	10,500
annual labor	6,500	11,232	11,232	11,232
electricity	3,500	11,000	11,000	11,000
installation costs	58,400	102,000	106,000	200,000
salvage value	5,750	6,500	7,500	25,000
Net present value	94,120	228,310	242,809	1,313,970
Annualized cost	$22,344	$54,200	$57,642	$311,932

It should be noted that the proposed sediment control structures are designed to decrease sediment run-off and establish proper regulatory constraints to the lowering of water quality.

III. Socioeconomic Demonstration

1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

Please refer to Attachment III. 1.

2. Describe this facility's effect on the employment of the area

Please refer to Attachment III. 2.

3. Describe how this facility will increase or avoid the decrease of area employment.

Please refer to Attachment III. 3.

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

Please refer to Attachment III. 4.

5. Describe any other economic or social benefits to the community.

Please refer to Attachment III. 5.

Attachment III.1

The project is designed with plans to mitigate impacts to the existing environment, as well as restore and enhance the area upon project completion. There are Pre-Law mining disturbances located within the permit area, as well as existing logging operations. These operations have affected some of the watersheds involved in a negative manner. Once mitigation begins, the stream banks will be stabilized to prevent erosion, species indigenous to the area will be planted to establish an adequate riparian zone and stream channels will be rehabilitated to curb sedimentation. This will provide a healthier habitat for aquatic species and wildlife leading to a more balanced ecosystem.

Attachment III.2

In august 2008 there were 618 unemployed in Letcher County out of 8672 resulting in a 7.1% unemployment rate. The proposed project will employ approximately 45 individuals in which 99% will be local residents. According to several studies, for every actual mining job there are 3 indirect, related jobs created. In this proposed mining scenario, there will be approximately 180 jobs that will be supported by this operation. Using this correlation, there is a real potential to decrease the unemployment rate in Letcher County by 2.0%. This rise in employment will help maintain employment in an area that has relatively little development, business and employment opportunities.

Mining jobs provide about 14% of all jobs in Letcher County. These jobs pay above average weekly wages as shown in Table III.2a. This facility will add positive effects on the area's employment not only by increasing its volume, but by creating higher paying jobs in which socioeconomic well-being can better be established. According to the table below, the average mining job in Letcher County will pay out 64% more per week than the average Letcher County weekly wage[12].

Table III.2a

Average Weekly Wage, 2006

	Letcher County	**Kentucky (Statewide)**	**U.S.**	**Ohio**
All Industries	$624	$677	$818	$742
Agriculture, Forestry, Fishing and Hunting	502	549	1,504	456
Mining	1,025	1,071	1,504	1,123
Construction	546	717	853	811
Manufacturing	607	874	990	962
Trade, Transportation, and Utilities	417	633	716	663
Information	609	753	1,235	918
Financial Activities	468	880	1,321	978
Services	462	585	720	653
Public Administration	507	743	936	890
Other	207	818	772	59

[12] The Kentucky Cabinet For Economic Development

Attachment III.3

Letcher County relies a great deal on the coal mining industry for employment. According to the Kentucky Coal Education website, maintained by the Kentucky Office of Energy Policy, Division of Fossil Fuels & Utility Services and the Kentucky Coal Association, as of Fiscal Year 2006 the coal industry has accounted for approximately 14.0 % of the counties available work force. From this project's inception it is expected to not only maintain the current employment rate, but to also improve it by creating an estimated 10 more jobs that were previously not available. In August of 2008 there were a suspected 618 out of 8,672 people able to work who were unemployed in Letcher County. This number will not increase due to the installation of this facility. It is likely the trend of 7% unemployment could continue downward with the help of these employment opportunities bringing the rate to 5.6% by the 5th year of this project.

Attachment III.4

This mining project will create approximately 45 jobs and will provide some 135 indirect employment positions in mining related industry including but not limited to: equipment sales/rental, engineering services, food services, fuel sales, and transportation. Because mining is nearly 14% of Letcher County's entire available workforce, the addition of mining jobs drives the local economy benefiting the communities the industry surrounds.

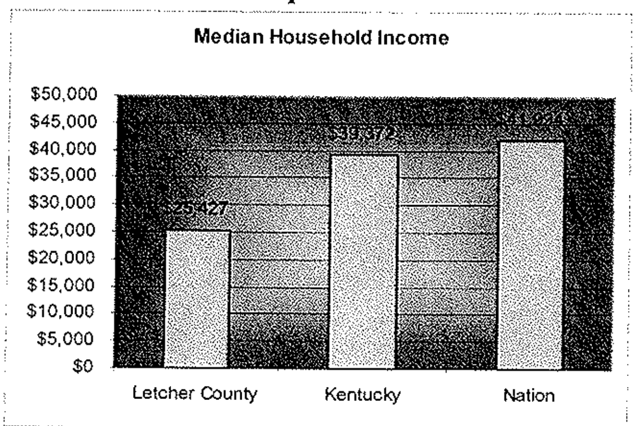
The mining industry contributes directly to Letcher County's economy through real, personal, and severance taxes. With the addition of jobs there is an increase in personal income tax. With most mining jobs in Letcher County paying a well above average salary of approximately $53,000, the county and its communities consequently earn more revenue. The severance tax rate on coal is 4.5% of which 50% is slated to be returned to the county of its origin. This project alone will generate approximately $1 million dollars in severance taxes in Letcher County. These tax bases play a vital role in providing Letcher County with available revenue to build and fund schools, bettering police and fire services, buying ambulances and EMT equipment and maintaining roads. Considering Letcher County is underdeveloped lacking business and industrial diversity, there are not many other sources for funding. Each mining operation, including the proposed, benefit the community by creating jobs, raising additional revenues and adding to useful and meaningful tax bases.

Attachment III.5

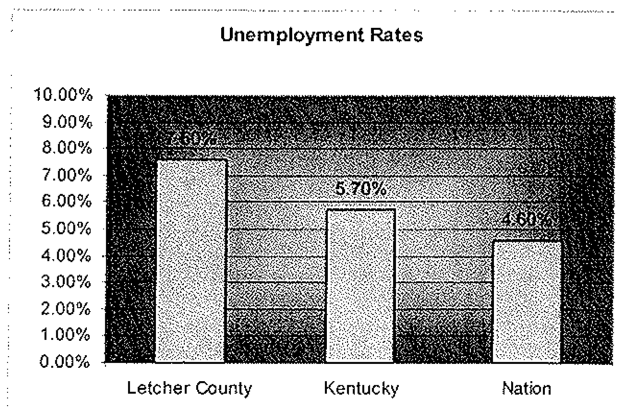
While contributing to Letcher County's tax base which is utilized to fund community development, the jobs associated with this project will pay out higher wages than that of many other jobs in the county. The job opportunities created by this project catalyze personal economic growth and supports sustainable, skilled laborers who desire to live and support the community.

According to the Kentucky Cabinet for Economic development, the median household income for this area is $25,427, which is below the state and national averages, $39,372 and $41,994 respectively.

Graph III.5.a

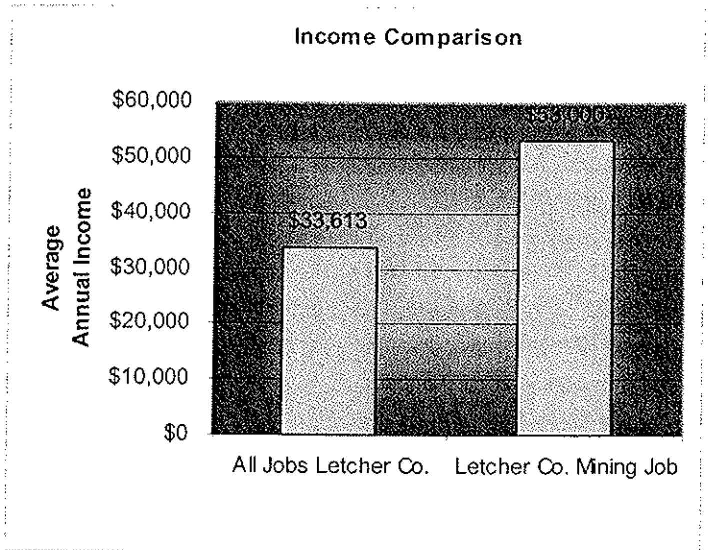


Graph III.5.b



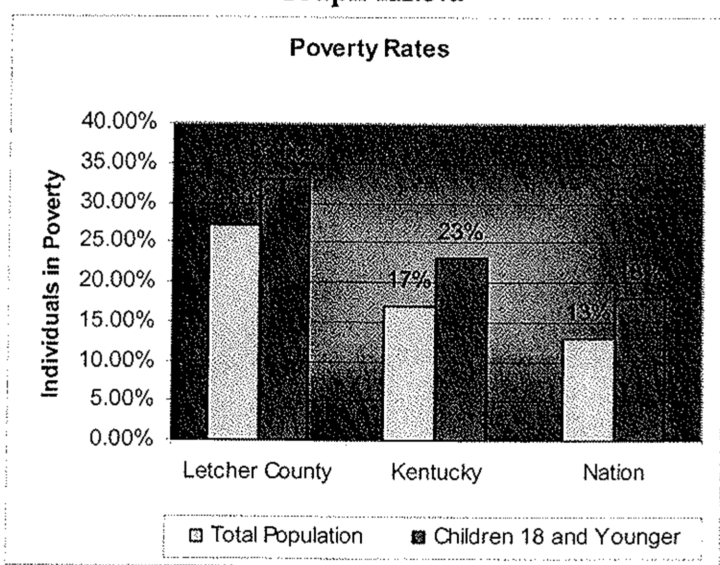
In 2006, there were approximately 1,400 employees working in mining and related industries with an annual earnings average of $53,000, more than double the annual household median for the area. In the same year, Letcher County reported approximately 6,291 employees in all industries, averaging annual earnings of $33,613. On average, each mining job created or maintained in Letcher County provides a single employee nearly $20,000 more than the areas average and more than twice the average median household income. In an area where 22 percent of all jobs are mining, the creation and maintenance of these jobs are detrimental to the economic and social well-being of individuals in the area.

Graph III.5.c



In a county where over 27 percent of the entire population lives below the federally mandated poverty line (compared to 17 percent in the state, 13 percent in the nation) as well as 33 percent children 18 years old or younger (compared to 22 percent in state, and 18 percent in the nation), each mining job, including the ones created or maintained by this project, prove vitally important to the health and welfare of the local communities.

Graph III.5.d



III. Socioeconomic Demonstration - continued

	Yes	No
6. Will this project be likely to change median household income in the county?	☒	☐
7. Will this project likely change the market value of taxable property in the county?	☒	☐
8. Will this project <u>increase</u> or decrease revenues in the county?	☒	☐
9. Will any public buildings be affected by this system?	☐	☒

10. How many households will be impacted by this project? 180

11. How will those households be impacted?

Please refer to Attachment III.11.

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? (if so describe how)	☐	☒

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? (If so describe how.)	☒	☐

Please refer to Attachment III.13.

Attachment III.11

The average weekly wage for mining employees in Letcher County is $1,025 in 2006 which accounted for over 38% of the county's total wages. Through the creation of mining jobs, such as the ones proposed, offer the affected households an annual average income of nearly $20,000 more than the annual average income in the county. Having more disposable income within a household provides better opportunities to pay for advanced education, contribute more spending to the local community and improve quality of life. According to Kentucky's Postsecondary Education Fact Sheet, only 6.8% of Letcher County's population has earned a bachelor degree. This number is well below others in comparison such as the state and national figures of 15.6% and 22.3% respectively. The non-degreed jobs this project provides pay some of the highest wages in Letcher County, also providing a means to facilitate higher education pursuits within these households[13].

Table III.11a

Highest Level of Education

	Letcher County	State	Nation
Less than a high school Diploma or GED	40.6%	25.8%	20.3%
High school diploma or equivalent	32.9%	33.4%	28.6%
Bachelor's degree or above	6.8%	15.6%	22.3%

Number of additional bachelor's degree holders needed in this county for it to be at the US average 2,979

[13] Kentucky Council on Postsecondary Education

Attachment III.13

Sediment control from previous disturbances such as pre-law mining, gas wells and logging will be corrected at the beginning and throughout the projects life. The old high walls that exist will be backfilled upon completion of the project. All existing overgrowth by invasive species of plants will be removed. Receiving streams that are silt laden will be cleared and reformed to better function. There are several small sites of trash and old mining equipment that are located around the permit area and will be loaded up and taken away from the natural environment. Removing this material from the site ensures proper reclamation and decreases the risk of someone wandering onto the permitted area and getting injured by the remains.

III. Socioeconomic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? (If so describe how.)	☒	☐

Please refer to Attachment III.14.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

Please refer to Attachment III.15.

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

Please refer to Attachment III.16.

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	FRED WEBB CHIEF ENGINEER	**Telephone No.:**	606 653-0125
Signature:		**Date:**	2-6-09

Attachment III.14

Prior to the start of this project, the area will be cleared and grubbed and all garbage will be removed and disposed of properly. Some of the access roads that currently exist lack any kind of sediment control and at the beginning of this project those problem areas will be corrected. This will decrease sediment laden discharge and silt contamination that has posed problematic threats since the Pre-Law disturbances.

A gas well that exists within the permitted area lacks sufficient sediment control. The proposed project will provide updated sediment control to this affected area improving the previous condition.

Attachment III.15

The proposed project will result in the removal of a minimum 211,000 tons of coal that would not have been made available to the market otherwise. At the current price of $80 per ton of coal, the severance tax could be calculated at $760,000 dollars. The increase in production of coal from this operation will allow that tax base to be re-harvested back into Letcher County and its communities leading to roads, schools and other business and infrastructures to be built. By directly creating 45 jobs this project will create around 135 other indirect employment opportunities for the local and surrounding communities while simultaneously increasing the personal and state taxes which are deductible to the county. Through additional sales associated with the indirect and direct employment such as, food and fuel, the majority of the local economy will reap positive socioeconomic benefits enhancing the current situation of the county and its communities.

Attachment III.16

The increase in operational efficiency of this facility will enhance and increase the production of this mine which, in turn, maintains jobs directly and indirectly related to this operation. Increased efficiency will sustain the operation of this facility which will provide approximately 45 jobs with above average wages of $1,025 (respective of area), in most cases provide healthcare plans for employees and their families. The facility's operation will additionally create another 135 jobs indirectly which will contribute to local and state governments tax base while sustaining more job security in an economically underserved employee market. Coal severance taxes of approximately $760,000 dollars will deliver much needed financial assistance into improving the surrounding community's roads and schools.

Resources Consulted

1. "Pipeline Cost Estimation" – Macro Mendex/Spencer Guy under direction of Professor Daene McKinney, Department of Civil, Architectural & Environmental Engineering, University of Texas at Austin, College of Engineering-as available September 29th 2008 at: http://www.ce.utexas.edu/prof/mckinney/ce311k/Proj-05/Cepm2.pdf

2. "Wastewater Cost Database" – Pennsylvania Department of Environmental Protection – Construction Cost Databases. As available September 29th 2008 at: http://www.dep.state.pa.us/dep/deputate/watermgt/wsm/WSM TAO/InnovTech/CostDB.htm

3. "Model Drainage Manual"- Manual for Highway Storm Water Pumping Stations, v.I-II. As available October 3, 2008 at: http://www.dot.state.co.us/Environmental/envWaterQual/docs/DrainageDesign/DrainageDesignManual_Chapter14_PumpStations.pdf

4. Rock and Dirt, The Equipment Market Place – http://www.rockanddirt.com

5. Payscale- www.payscale.com

6. Kentucky Climate Center at Western Kentucky University

7. Sperling's Best places- http://www.bestplaces.net/city/Whitesburg-Kentucky.aspx

8. "Applied Hydrology and Sedimentology for Disturbed Areas" –Department of Agricultural Engineering University of Kentucky & Department of Agricultural Engineering Oklahoma State University. Barfield, Warner and Hamm. 1983. pg .109-124.

9. Beckman Environmental- http://www.beckmanenvironmental.com/index.php

10. Cost Helper- http://www.costhelper.com/cost/home-garden/septic-system.html & Rhode Island Regional Water program.

11. Kentucky Coal Education – www.coaleducation.org

12. Kentucky Cabinet for Economic Development – www.thinkkentucky.com

13. Kentucky Council on Postsecondary education- http://cpe.ky.gov & http://cpe.ky.gov/NR/rdonlyres/9E76792F-BC6F-498A-9DFF-255DFFC61EB4/0/Letcher.pdf